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(56) Documents Cited..

GB 2275800 A

GB 2251504 A

US 4802114 A

US 4626848 A

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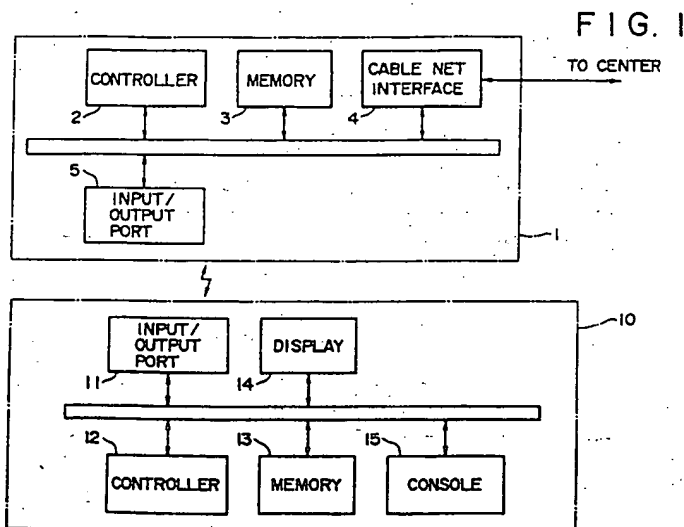
INT CL<sup>6</sup> G06F 9/24 9/445, G08C 17/00 17/02 17/04

17/06

ONLINE : WPI, INSPEC, COMPUTER DATABASE

(54) Downloading software to terminal apparatus

(57) An information terminal apparatus 10 providing easier maintenance of software required for a variety of services comprises an input port 11 for receiving external software transmitted by radio, infrared or ultrasonic means; a first memory 13 for storing the software received; a first controller 12 operated in accordance with execution of the software; a console 15 for inputting data; and a display 14 for visually representing various kinds of information in conformity with execution of the software. The software may be obtained via a cable box 1 for transferring a signal to or from the terminal apparatus 10. The cable box comprises an interface 4 for transferring information to and from a host processor; a second memory 3 for storing software transmitted from the host processor; and a second controller 2 for controlling the signal transfer to or from the interface, the second memory and the terminal apparatus 10. The apparatus may be used for games, home shopping, home banking and auction services.



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FIG. 1

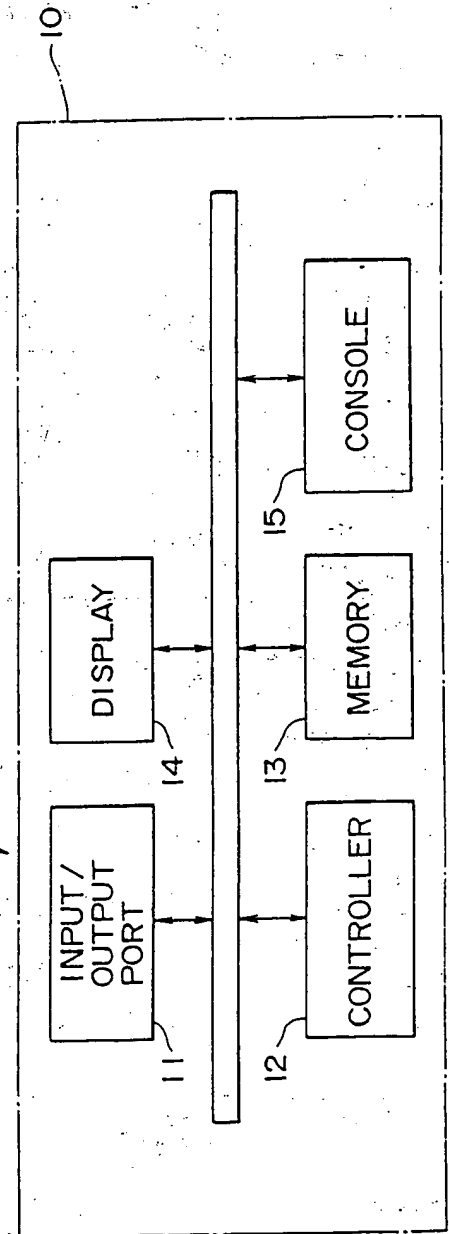
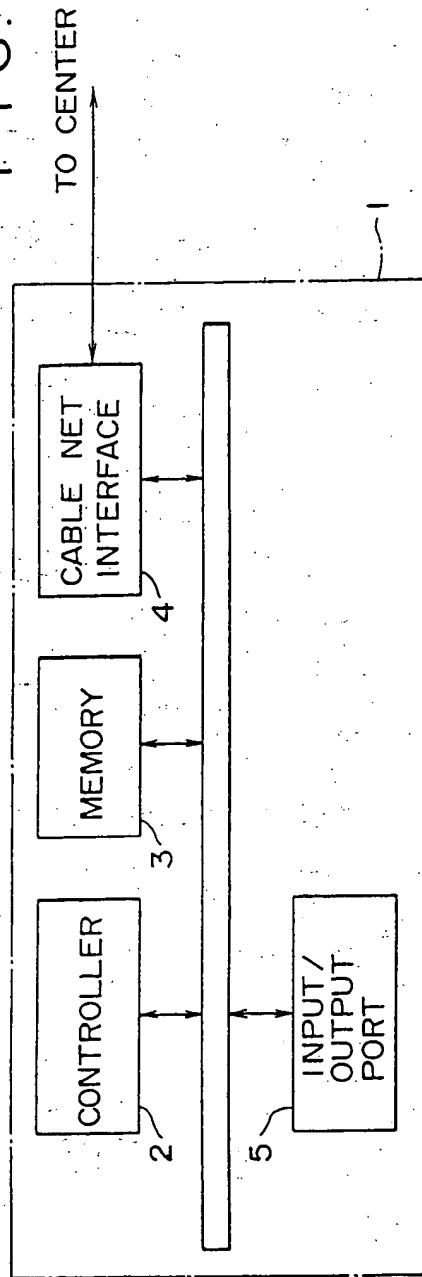


FIG. 2

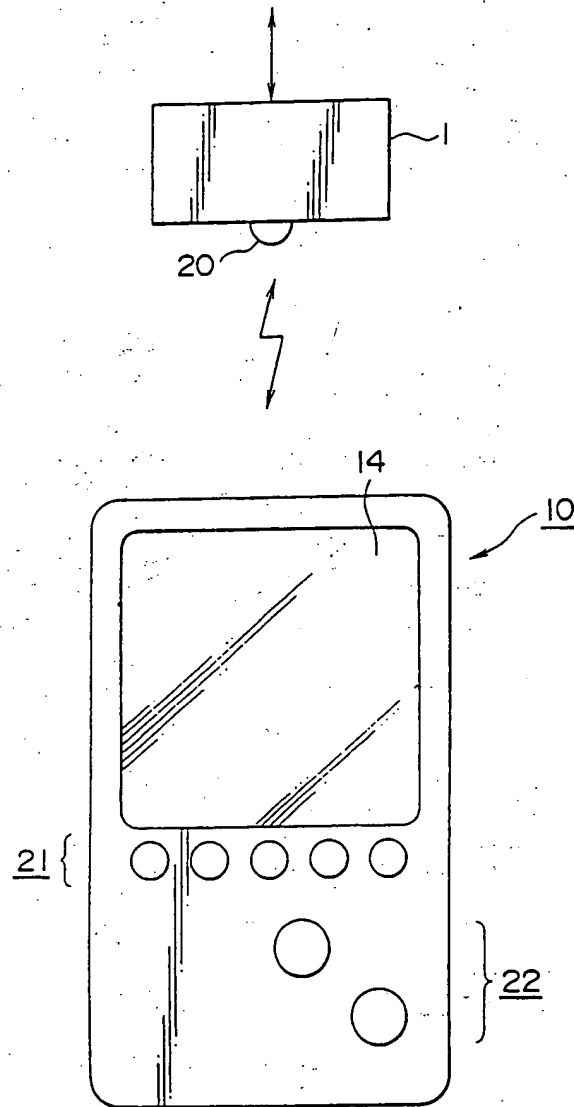


FIG. 3C

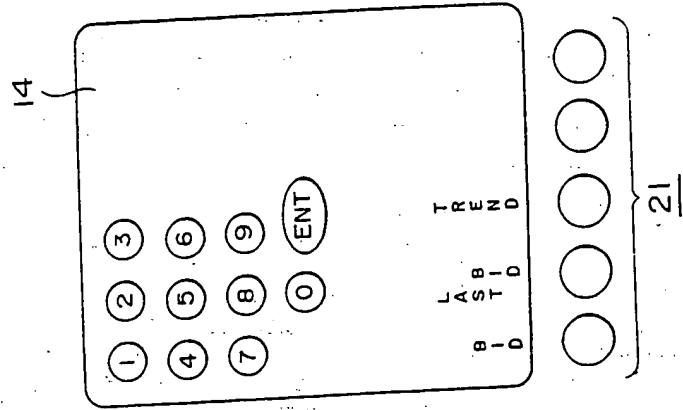


FIG. 3B

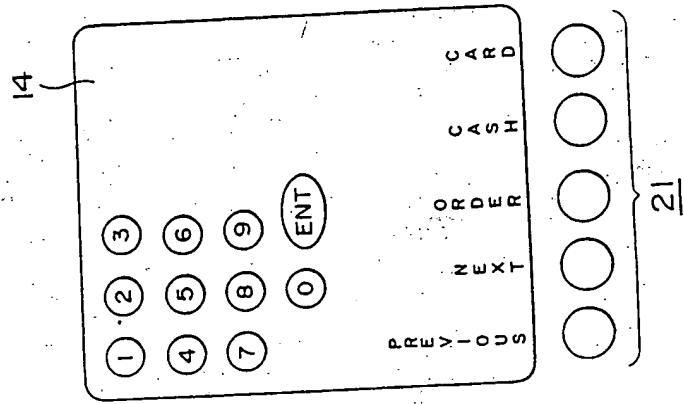


FIG. 3A

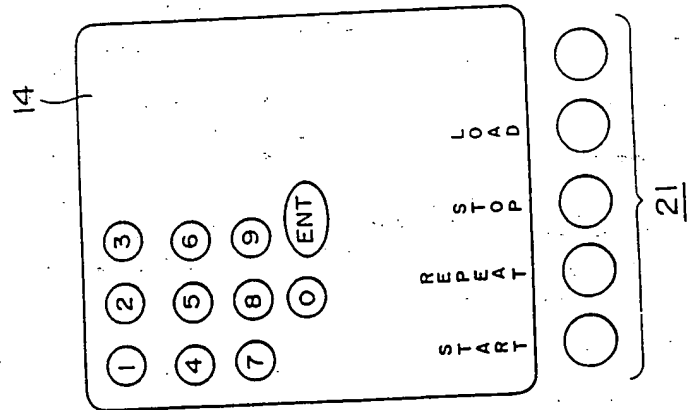


FIG. 4

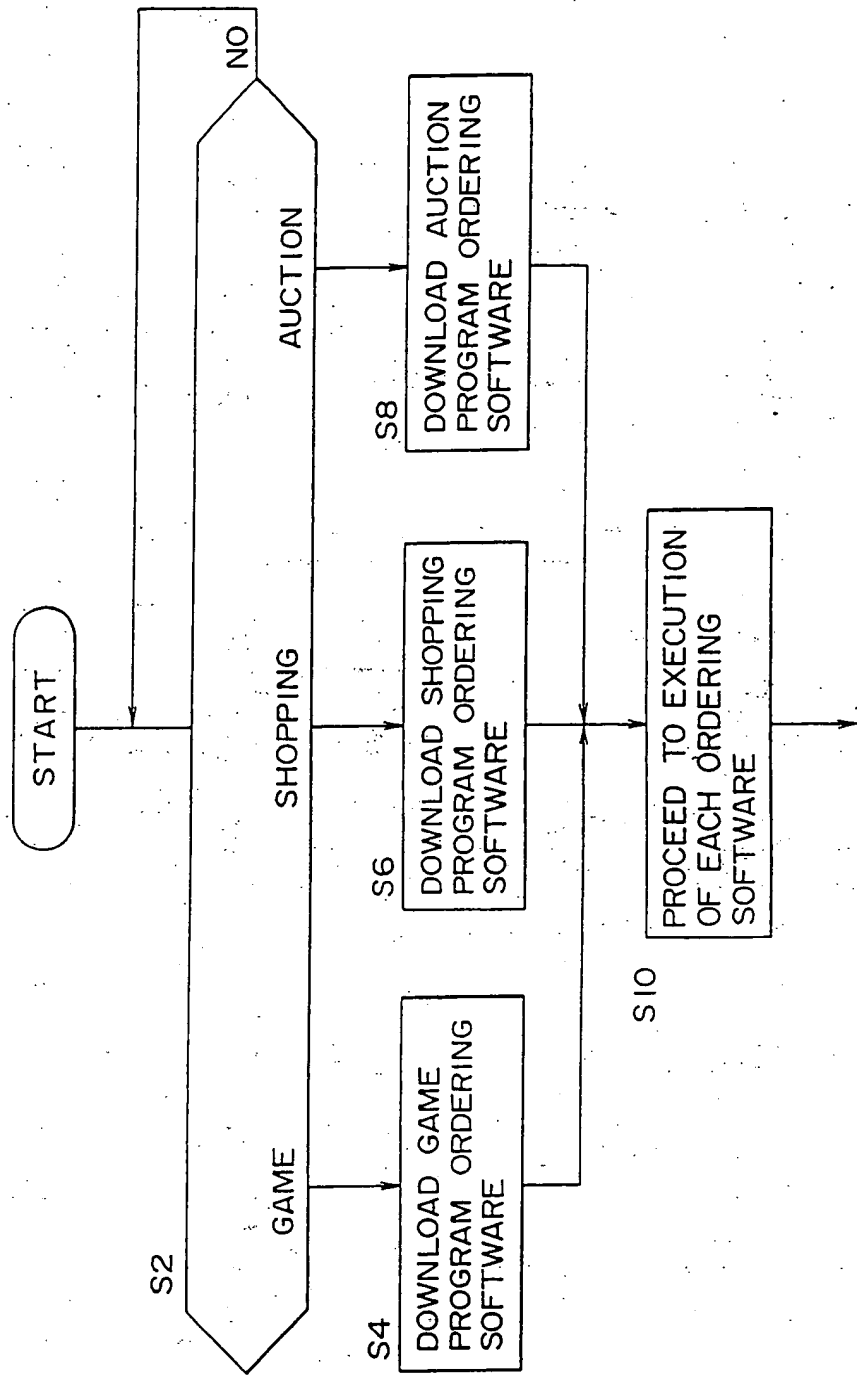


FIG. 5

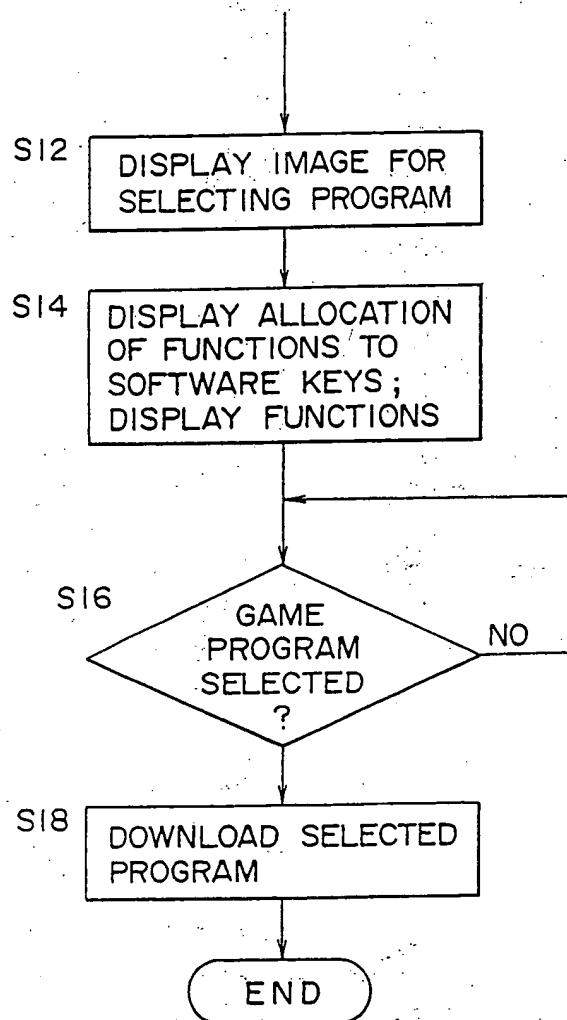
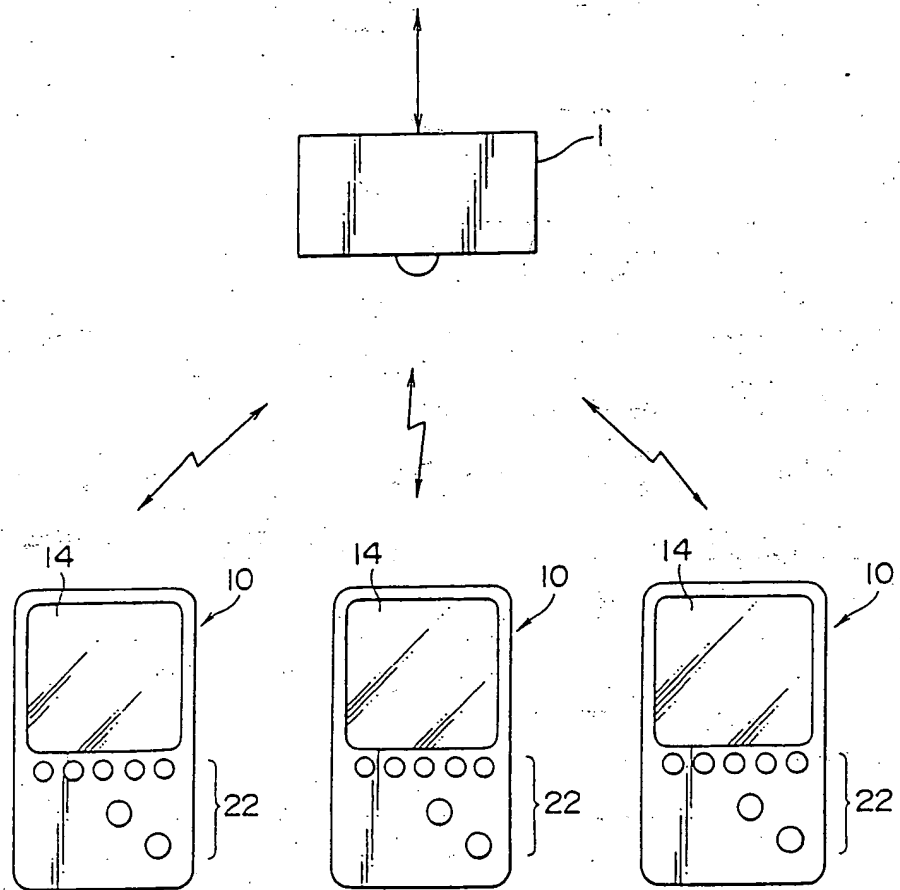


FIG. 6





## INFORMATION TERMINAL APPARATUS

The present invention relates to an information terminal apparatus for downloading software such as application software via a network of a cable television or uploading data from a user terminal.

There have been known a TV game system and a home shopping system utilizing a cable network. In a TV game system, there is adopted a method where some channels are always used for transmission of game programs to a user terminal, and desired game programs are received through those channels.

Meanwhile in a home shopping system, since the cable network supports bidirectional communication, a user is able to place an order merely by the use of such cable network. In the case of supporting such bidirectional communication, an order of any displayed commodity is placed by the use of a cable box remote control unit designed for ordering by means of a fixed menu or key. In another home shopping system, commodities which include one which the user desires to order are merely displayed, and placing an order is performed via a telephone line system.

Regarding the bidirectional information terminal apparatus, there are disclosed some examples in U.S. Patent Applications Nos. 5,077,607 and 5,191,410, wherein check-out in a hotel or the like can be settled from a room without the necessity of going to a front desk in the hotel. In the information terminal apparatus, selected images signifying a charge, indication for check-out and so forth are visually represented on a display provided in the terminal apparatus, so that the guest can receive various services while watching the displayed images.

In the above information terminal apparatus, when employed in a TV game system for example, a predetermined channel is solely occupied for transmission of game

programs, so that there exists a disadvantage of wastefully using valuable channel bandwidth. Furthermore, in any conventional network known heretofore, it is impossible to acquire desired information relative to popular software games and unpopular ones. In addition, there is another disadvantage that, in a system which does not provide bidirectional communication, the billing of the charge cannot be triggered by downloading the game.

Meanwhile in the home shopping system, a user is able to place an order after confirming a commodity list sent from a shopping centre. However, placing an order in this case is executed by means of a fixed menu or key in a cable box remote control unit provided on the user side, and therefore convenience in general-purpose usability is insufficient. And the operational facility is inferior at the time of receiving some other services. Furthermore, in another home shopping system, an order needs to be placed via the existing telephone line system to consequently raise a problem of requiring a considerable time.

It is an object of the present invention to provide an information terminal apparatus capable of ensuring enhanced operational facility and realizing easier maintenance of software required for a variety of services.

According to one aspect of the present invention, there is provided an information terminal apparatus comprising:

- an external information input port for receiving external software transmitted thereto by radio means;
- a first memory for storing the software received by said external information input port;
- a first controller operated in accordance with the execution of the software stored in said first memory;
- a console for inputting predetermined data in conformity with the execution of said software; and

a display for visually representing various information in conformity with the execution of said software.

The invention also provides an information terminal apparatus comprising:

a first controller operated in accordance with predetermined software;

a first memory for storing said software and also various data generated by the operation of said first controller;

a display for visually representing various kinds of information in conformity with the operation of said first controller;

a console for inputting predetermined data in conformity with the execution of said software; and

an external input/output port for receiving, by radio means from the outside, said software executed by said first controller, and transmitting the stored data in said memory to the outside by radio means.

In the present invention, external software transmitted by radio means from the outside is received by the external information input port and then is stored in the memory. The controller operates in accordance with the software stored in the memory. Subsequently, predetermined data is inputted from the console in compliance with the execution of the software, and various kinds of information are visually represented on the display. Therefore, any software required for individual service can be automatically interchanged, and maintenance can be carried out with facility despite any change of the software.

Furthermore, in the present invention where the controller operates in accordance with the software stored in the memory, predetermined data is inputted from the console in conformity with the execution of the software, then the various kinds of information are visually

represented on the display, and the various data are stored in the memory. Thereafter the data thus stored in the memory is transmitted by radio means to the outside from the external output port.

5           The invention will be further described by way of non-limitative example with reference to the accompanying drawings, in which:-

          Fig. 1 is a block diagram showing the constitution of an embodiment of the present invention;

10           Fig. 2 is an exterior view illustrating a cable box and an intelligent remote control unit in the embodiment of Fig. 1;

          Figs. 3A to 3C are exterior views showing display examples on the intelligent remote control unit in the  
15           embodiment of Fig. 1;

          Figs. 4 and 5 are flow charts for explaining the operation of an information terminal system in the embodiment of Fig. 1; and

          Fig. 6 is a conceptional diagram showing the  
20           constitution of a system equipped with a plurality of intelligent remote control units to one cable box by using a method relative to detection of collision and retransmission.

          Hereinafter the present invention will be  
25           described in detail with reference to a preferred embodiment thereof shown in the accompanying drawings.

          Fig. 1 is a block diagram showing the constitution of an exemplary embodiment of the invention. In this diagram, an information terminal apparatus  
30           (information transmission system) represented by this embodiment is constituted on the basis of a cable network having a bidirectional communication function. A cable box 1 is a terminal apparatus provided on a user side and consists of a controller 2, a memory 3, a cable net  
35           interface 4 and an input/output port 5. The controller 2

executes predetermined data processing and controls other component devices in accordance with a program stored in the memory 3 or a program downloaded from an unshown centre. In the memory 3, a predetermined basic program is stored previously, and predetermined software downloaded from the centre by an undermentioned process is also stored when necessary.

The cable net interface 4 is provided for transferring data to or from the cable network, and performs conversion or modulation of the data. And the input/output port 5 transfers the data to or from an intelligent remote control unit 10.

The intelligent remote control unit 10 is a portable terminal (such as a personal digital assistant PDA or a personal intelligent communicator PIC), and transmits various commands to the cable box 1 or receives the data therefrom in accordance with a predetermined program. In this embodiment, the remote control unit is usable for downloading of game programs, and also for home shopping, home banking or in an auction system.

The intelligent remote control unit 10 consists of an input/output port 11, a controller 12, a memory 13, a display 14 and a console 15. The input/output port 11 is provided for transferring the data to or from the input/output port 5 of the cable box 1, and sends the transmission data from the controller 12 to the input/output port 5 while supplies the reception data from the input/output port 5 to the controller 12.

The controller 12 executes predetermined data processing or control of the other components in accordance with the program stored in the memory 13 or the program downloaded from the centre via the cable box 1. In the memory 13, a predetermined basic program is stored previously, and also predetermined software downloaded from the centre can be stored. The display 14 has a touch panel

type liquid crystal screen and displays thereon the data supplied from the controller 12. The console 15 consists of undermentioned software function keys and fixed keys, and any desired software or function can be selectively  
5 indicated by manipulating such keys.

With respect to the bandwidth in downloading and uploading, the transfer of data between the cable box 1 and the intelligent remote control unit 10 is different from the transfer of data between the cable box 1 and the cable  
10 network (cable head terminal). And the transmission of information between the cable box 1 and the intelligent remote control unit 10 is performed by radio means using infrared rays, electric waves or ultrasonic waves. For the transmission of information between the cable box 1 and the  
15 intelligent remote control unit 10, bidirectional communication is possible for downloading or uploading the data and the program information. It is a matter of course that, although not shown, a television receiver is also provided to receive the signal transmitted from the centre.

Fig. 2 shows exterior views of the cable box 1 and the intelligent remote control unit 10 described above. In this diagram, the cable box 1 is equipped with a transceiver  
20 for transmission and reception of information, and the transceiver 20 is incorporated in the aforementioned input/output port 5. The intelligent remote control unit 10 is so sized as to be placeable on a user's single hand, and comprises the display 14, software function switches 21 and fixed switches 22 of the console 15. The software function  
25 switches 21 are such that the functions thereof are settable in accordance with the software downloaded to the intelligent remote control unit 10. Meanwhile in the fixed switches 22, predetermined functions are allocated.

Some display examples represented on the display  
30 14 and the functions allocated to the software function switches 21 will now be described below with reference to

Figs. 3A - 3C. Fig. 3A is an exterior view illustrating an example displayed when a game program has been downloaded. In this case, functions allocated to ten numeral keys and the software function switches 21 are visually represented on the display 14. The ten numeral keys are so provided that, when any displayed one is touched, corresponding data can be inputted therefrom. Meanwhile the software function switches 21 are so provided that any desired function represented visually on the display 14 can be inputted by depressing the key corresponding to that function. In this diagram, functions of "START", "REPEAT", "STOP" and "LOAD" are sequentially allocated rightward in this order. "START" is a function to indicate a start of execution of the program; "REPEAT" is a function to indicate a repetition of the operation; "STOP" is a function to indicate a stop of execution of the program; and "LOAD" is a function to indicate downloading of the selected game program.

Next, Fig. 3B is an exterior view illustrating a display example in home shopping. In this case also, functions allocated to the ten numeral keys and the software function switches 21 are visually represented on the display 14, as in the foregoing case. In this diagram, functions of "PREVIOUS", "NEXT", "ORDER", "CASH" and "CARD" are sequentially allocated rightward in this order. "PREVIOUS" is a function to indicate that the commodity displayed on the screen is replaced with an immediately preceding one; "NEXT" is a function to indicate the commodity displayed on the screen is replaced with a next one; ORDER is a function to indicate that the commodity being displayed now is ordered; "CASH" is a function to indicate that the ordered commodity is paid in cash; and "CARD" is a function to indicate that the ordered commodity is paid with a credit card.

Fig. 3C is an exterior view illustrating a display example in auction. In this case, functions of BID, LAST

BID and TREND are allocated sequentially to the software function switches 21 rightward in this order. BID is a function to indicate a bid; LAST BID is a function to indicate a last bid; and TREND is a function to indicate a call of the bidding trend.

In this manner, the functions complying with the individual services are allocated to the software function switches 21 respectively. Therefore, even though the terminal apparatus is a portable type with a small area for installation of the switches and so forth, it is still capable of meeting the requirements for various services.

Now the operation performed in the above-described constitution of the embodiment will be described below with reference to Figs. 4 and 5. In the initialized cable box 1, the software downloaded for ordering an application program is stored in its memory. And in the intelligent remote control unit 10, other software is stored for selection of game, shopping or auction in accordance with the ordering software, and images for selecting the application program are visually represented on the display 14 by the other software.

First in the cable box 1, the procedure shown in a flow chart of Fig. 4 is executed in accordance with the ordering software. At step S2, a decision is made as to which of game, shopping and auction has been selected by the intelligent remote control unit 10. In case none has been selected, the result of such decision is NO, and step S2 is executed repeatedly. If a user desires to play a specified game, the user can select the game by manipulating the intelligent remote control unit 10.

This command is transmitted to the input/output port 5 of the cable box 1 via the input/output port 11 of the intelligent remote control unit 10. In response to this command, the cable box 1 down-loads, at step S4, the game program ordering software from the centre via the cable



network. The game program ordering software is then stored in the memory 3 of the cable box 1 while being transmitted via the input/output port to the intelligent remote control unit 10 to be thereby stored in the memory 13. Subsequently  
 5 in the cable box 1 and the intelligent remote control unit 10, as shown in Fig. 4, the operation proceeds to the downloaded game program ordering software at step S10.

On an unshown television screen, there are displayed a list of available game programs and respective  
 10 explanations. The intelligent remote control unit 10 first displays, at step S12 in accordance with the flow chart of Fig. 4, the image of Fig. 3A on the display 14 for selecting desired one of the available game programs. Then at step S14, allocation of functions to the software function  
 15 switches 21 and the functions thereof are displayed. Thereafter at step S16, a decision is made as to which game program has been selected, and in the case of no selection, the operation at step S16 is executed repeatedly. Subsequently the user selects a desired game program by  
 20 manipulating the touch panel and depresses the software function switch 21 to which the LOAD function is allocated. Then the result of the decision at step S16 is turned to YES, and the operation proceeds to step S18. At this step, a command for designating the selected game program and the  
 25 downloading of the selected program is transmitted via the input/output port 11 to the cable box 1.

In response to this command, the cable box 1 downloads from the centre the game program selected by the user. Subsequently, when the software function switch 21  
 30 corresponding to the START function is depressed, the downloaded game program is executed by the intelligent remote control unit 10. The result of the game is uploaded via the input/output port 11 and then is stored in the cable box 1 or an unshown cable head terminal.

Since the game program is supplied practically to both the cable box 1 and the intelligent remote control unit(s) 10, the option of the game is increased and the number of players is not fixed. In addition, due to the use  
5 of a bidirectional cable network, one game can be played by a plurality of users in different places.

When the user has selected home shopping, the operation proceeds from step S2 to step S6. At step S6, shopping program ordering software is downloaded to the  
10 user's intelligent remote control unit 10. Any commodity ordered by the user and a method of payment (cash or card) are uploaded via the input/output port 11 to the cable box 1 and the unshown centre. In this manner, the user can place an order without reserve while seeing a specified product.

15 In another case where the user has selected auction, the operation proceeds from step S2 to step S8 shown in Fig. 4, and an auction program is downloaded to the intelligent remote control unit 10. Then the user makes a bid through the individual intelligent remote control unit  
20 10, and the bid is transmitted to the head terminal in the cable network. The bid speed and the highest bid price are sent back to each user, so that the user can judge the result of his bid.

The above embodiment represents merely an  
25 exemplary case where the cable box and the intelligent remote control unit are disposed in a relationship of 1:1. However, the present invention is not limited to such an example alone, and it may be modified, by the technique of collision detection and retransmission, to constitute a  
30 system where a plurality of intelligent remote control units 10, 10, 10 are installed for a single cable box as shown in Fig. 6.

According to the information terminal apparatus of the present invention, as described hereinabove, it  
35 comprises an external information input port for receiving

external software by radio means, a memory for storing the software received by the information input port, a controller operated in accordance with the software stored in the memory, and a display for visually representing various kinds of information in conformity with the execution of the software. Because of such constitution, the software is down-loaded every time a request is generated, so that the software can be updated in response to each request. Furthermore, maintenance of the software can be achieved with certainty as the software is distributed through a cable network. And it is rendered possible, by downloading different kinds of software, to attain another advantage of enjoying various services inclusive of game, home shopping, home banking and so forth.

In another constitution of the information terminal apparatus according to the invention, it comprises a controller operated in accordance with predetermined software, a memory for storing various data generated by the operation of the controller, a display for visually representing various kinds of information in conformity with the operation of the controller, a console for inputting predetermined data in conformity with execution of the software, and an external output port for transmitting the stored data from the memory to an external device by radio means. Consequently, there is attainable an advantage that the user's intention on the side of the information terminal apparatus can be reflected.

## CLAIMS

1. An information terminal apparatus comprising:
  - an external information input port for receiving
  - 5 external software transmitted thereto by radio means;
  - a first memory for storing the software received
  - by said external information input port;
  - a first controller operated in accordance with the
  - execution of the software stored in said first memory;
  - 10 a console for inputting predetermined data in
  - conformity with the execution of said software; and
  - a display for visually representing various
  - information in conformity with the execution of said
  - software.
  - 15
2. The information terminal apparatus according to claim 1, wherein said software is obtained via a cable box for transferring a signal to or from the information terminal unit, said cable box comprising:
  - 20 an interface for transferring information to and
  - from a host processor;
  - a second memory for storing the software
  - transmitted thereto from said host processor; and
  - a second controller for controlling the signal
  - 25 transfer to or from said interface, said second memory and
  - said information terminal unit.
3. The information terminal apparatus according to claim 2, wherein said software comprises a program for
  - 30 playing a game, and input key means corresponding to the
  - relevant program function is visually represented on said
  - display.

4. The information terminal apparatus according to claim 3, wherein the function of said input key means is executed by manipulating the displayed portion thereof.

5 5. The information terminal apparatus according to claim 4, wherein said input key means has a start key and a stop key, and execution of the program is started or stopped by selectively manipulating said keys.

10 6. The information terminal apparatus according to any one of claims 2 to 5, wherein said software comprises a program for home shopping, and input key means corresponding to the relevant home shopping program function is visually represented on said display.

15 7. The information terminal apparatus according to claim 6, wherein the function of said home shopping program input key means is executed by manipulating the displayed portion thereof.

20 8. The information terminal apparatus according to claim 7, wherein said input key means has an order key and a payment key, and the home shopping program is executed by selectively manipulating said keys.

25 9. The information terminal apparatus according to claim 8, wherein said input key means includes a plurality of numeral keys.

30 10. The information terminal apparatus according to any one of claims 2 to 9, wherein said software comprises a program for auction, and input key means corresponding to the relevant auction program function is visually represented on said display.

35

11. The information terminal apparatus according to claim 10, wherein the function of the auction program key input means is executed by manipulating the displayed portion thereof.

5

12. The information terminal apparatus according to claim 11, wherein said input key means has an order key and a payment key, and the auction program is executed by selectively manipulating said keys.

10

13. The information terminal apparatus according to claim 12, wherein said input key means includes a plurality of numeral keys.

15

14. An information terminal apparatus comprising:  
a first controller operated in accordance with predetermined software;  
a first memory for storing said software and also various data generated by the operation of said first controller;  
a display for visually representing various kinds of information in conformity with the operation of said first controller;  
a console for inputting predetermined data in conformity with the execution of said software; and  
an external input/output port for receiving, by radio means from the outside, said software executed by said first controller, and transmitting the stored data in said memory to the outside by radio means.

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15. Information terminal apparatus constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

35



Application No: GB 9506545.4  
Claims searched: 1-15

Examiner: B.G. Western  
Date of search: 30 June 1995

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.N): G4A (AFL) ; G4H (HRE)

Int Cl (Ed.6): G06F (9/24, 9/445) ; G08C (17/00, 17/02, 17/04, 17/06)

Other: On-line : WPI, INSPEC, COMPUTER DATABASE

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X,P	GB-2275800-A (PIONEER) See whole document	1,14
X	GB-2251504-A (SAMSUNG) See whole document	1,14
X	US-4802114-A (SOGAME) See whole document	1,14
X	US-4626848-A (EHLERS) See whole document	1,14

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.